### (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

#### (19) World Intellectual Property Organization

International Bureau



### ) DREID BINKRIK IN BIBNA HORN BONK BORN BORN BIR IN DER KORBE KIRRE KINKE BINKE IKK BEROOM KEIR RIER IN DE KR

## (43) International Publication Date 26 August 2004 (26.08.2004)

#### **PCT**

# (10) International Publication Number WO 2004/071339 A2

(51) International Patent Classification7:

\_\_\_\_\_ A61F

(21) International Application Number:

PCT/US2004/003605

(22) International Filing Date: 5 February 2004 (05.02.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 10/358,530

5 February 2003 (05.02.2003) US

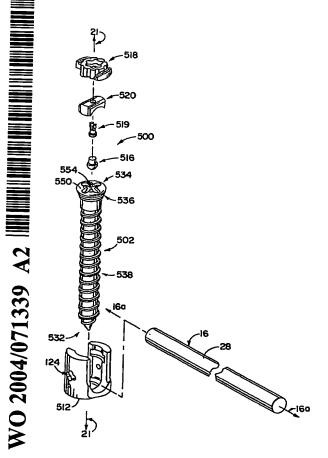
- (71) Applicant (for all designated States except US): PIO-NEER LABORATORIES, INC. [US/US]; 375 River Park Circle, Marquette, MI 49855 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): JANOWSKI, Brian, P. [US/US]; 971 Highland Drive, Marquette, MI

49855 (US). KORHONEN, Francis, J. [US/US]; 522 Elm Street, Neguanee, MI 49866 (US). KILPELA, Thomas, S. [US/US]; 1600 County Road #492, Marquette, MI 49855 (US). BERREVOETS, Gregory [—/US]; 143 Heidtman, Skandia, MI 49885 (US).

- (74) Agents: SAMPLES, Kenneth, H. et al.; Fitch, Even, Tabin & Flannery, Room 1600, 120 South LaSalle, Chicago, IL 60603 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: LOW PROFILE SPINAL FIXATION SYSTEM



(57) Abstract: A spinal fixation system is provided that, in one form, includes a coupling member having a cam lock member that is fixed against translation therealong as it is turned with turning of the cam lock member causing an elongate member such as a spinal rod to be pushed downward in the coupling member for fixing the rod therein. In another aspect, the rod is fixed against a low profile insert that seats in a recess formed in the head of an anchor member projecting from the coupling member. The insert has an upper surface against which the rod is fixed and that in one form is flat to provide for line contact against the rod so as to minimize damage thereto. In another form, the cam lock member cams against a clamping member driving it downward in the coupling member for fixing the rod therein.

### WO 2004/071339 A2



(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.